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USES AND LIMITATIONS OF FARM SURVEYS

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1. SUMMARY

Farm surveys are an indispensable tool for use at all levels of agricultural policy and in important phases in agricultural economics research. This paper is an attempt to synthesise some of the more important recent discussions that have centred round the roles of surveys in economics in general and in farming in particular. Farm surveys are comparatively recent in Australia. There is need for more of them, covering not only technical and financial data, but personal, subjective and institutional data also. Such surveys should be regarded as prerequisites for more effective policy-making in agriculture, and as such, provision for them should be incorporated within policy for its guidance and evaluation.

2. INTRODUCTION

It is within the experience of most economists and agricultural economists that politicians and the community at large have a low level of appreciation of work in the social sciences. For this these people are not entirely to blame. The history of modern Western thought and culture reveals rationalism to be a predominant element "related to the trinity of economics, technology and science".¹ "This rationalism attempted to eliminate the irrational from the world picture. The world is viewed as a coherent reasonable structure."² It is only comparatively recently that "rationalistic [economic] models are now

¹ W. A. Weisskopf, *The Psychology of Economics* (London: Routledge and Kegan Paul Ltd., 1955), p. 245.

² *Loc. cit.*

interpreted as methodological devices . . . demoted to a mere box of tools",³ and that 'economic non-rationality' is recognised in the behaviour of the consumer and entrepreneur. But with increasing social control, increasing attention by economists to non-economic values and 'irrationality' in motivations, together with progress in economics generally, and in social psychology in the measurement of attitudes, beliefs, intentions and expectations⁴ and the development of economic psychology⁵, further considerable improvement may be expected in the standing of economic science in the community and in its role in policy formation and execution.

One major reason for these improvements is the increasing use and development of the survey as a method of investigation. In its broadest meaning a survey is "a more or less comprehensive inquiry into numerous aspects of a situation, as it exists at a given time in a given community, with rather definite educational, propagandist and ameliorative purposes. As such it may utilize any or all known methods of enquiry".⁶ This general type of social survey is now seldom undertaken. On the other hand, specialised sample enumerative surveys and sample interview surveys are "rapidly becoming one of the fundamental research tools of all the social sciences . . . to conduct basic research, . . . to guide policy, and to improve practical operations in business and government".⁷ Farm surveys of the farm management type, for instance, in contrast with farm soil surveys or those concerned with only physical attributes of farms, differ from other particular sample interview and enumerative surveys only in that they are concerned mainly with farm operators. The function and role of these farm surveys in agricultural economic science and agricultural economic policy bears the same relationship as that which any particular social survey bears to its particular social science or group of disciplines, and to its related policy area. Before dealing with farm surveys in particular it is desirable to examine in outline the role of sample interview and sample enumerative surveys in economic science and related fields of social action.

3. ROLE OF SURVEYS IN RESEARCH AND POLICY

Research

The role of observation and appeal to fact in the various phases of scientific method are widely understood. But in economic science the data traditionally used are those "collected and published because of practical or legal requirements not related to research objectives".⁸

³ *Ibid.*, p. 247.

⁴ David Krech and Richard S. Crutchfield, *Theory and Problems of Social Psychology* (New York: McGraw-Hill, 1948), pp. 205-272.

⁵ George Katona, *Psychological Analysis of Economic Behaviour* (New York: McGraw-Hill, 1951), pp. 3-42.

⁶ George A. Lundberg, *Social Research* (2nd Edition; New York: Longmans Green and Co., 1942), p. 388.

⁷ Rensis Likert, "The Sample Interview Survey as a Tool of Research and Policy Formation," *The Policy Sciences*, Editors: Daniel Lerner and Harold D. Lasswell (Stanford: Stanford University Press, 1951), p. 233.

⁸ Katona, *op. cit.*, p. 301.

It is to supplement these data and to obtain data specifically related to research objectives which characterise the role of surveys in economic research. The social statistics to which economists at present have of necessity to refer have additional shortcomings. They are net, unrelated to other attributes possessed by the same individuals, and they are rarely published as frequency distributions. It is conceivable that with improvements in census taking and reporting some of these objections will be overcome. But as research proceeds and as different problems arise they are bound to recur. In the sample enumerative survey each of these objections is fully met. All of the data concerning the same people can be assembled. They can be processed to show the composition of the net aggregates of the social statistics and to meet other specialised research objectives. Moreover, the interview survey constitutes a method of achieving an understanding of subjective economic phenomena and it is a prerequisite for their measurement.

Non-economic motivations, attitudes and expectations influence economic behaviour and unless measured they are either "ignored, thrown into residual random disturbances or exogenous categories or used as an excuse for lack of deeper analysis, with economic results depending on the 'state of expectation'".⁹ The sample interview survey also makes "possible the integration of psychological study of behaviour of individuals into the study of aggregate statistics".¹⁰ This seems to be a necessary development for the establishment of useful theories of relations among aggregates. As Arrow points out, "in order to have a useful theory of relations among aggregates, it is necessary that they be defined in a manner derived from the theory of individual behaviour".¹¹ Finally, for successful prediction, relationships from empirical data require the quality of "autonomy".¹² Traditionally, economists have sought such relationships from historical data, and have projected into the future those relations which held in the past. But with "changes in technology, tastes, habits, and individual psychology continuously accruing . . . many historical studies . . . are outmoded as far as present behaviour patterns are concerned . . . it does seem better to try to keep up with structural changes [for instance] through repetitive examination of survey data than to rely blindly and solely on distant historical records".¹³

Policy

Sample interview and enumerative surveys are important tools available for policy formation and execution and necessary ones for policy evaluation. In policy formation these surveys can show the proportion of the population favouring and opposing a particular policy, provide

⁹ Lawrence R. Klein, "Applications of Survey Methods and Data to the Analysis of Economic Fluctuations", *Contributions of Survey Methods to Economics*, Editor: Lawrence R. Klein (New York: Columbia University Press, 1954), p. 250.

¹⁰ John B. Lansing, "Concepts Used in Surveys", *Ibid.*, p. 37.

¹¹ Kenneth J. Arrow, "Mathematical Models in the Social Sciences", *The Policy Sciences*, *op. cit.*, p. 134.

¹² Klein, *op. cit.*, p. 241. Autonomy is "the property of remaining valid under a variety of external conditions".

¹³ *Ibid.*, p. 256.

evidence on what policy is desired and needed, differentiate between those who favour one policy and not another, obtain data on levels of understanding of various sections of the public on particular issues, and so on. They can show legislators "the real desires and wishes of the public, help to disarm special pressure groups, and show where there is need for greater public information". "In serving all of these functions, survey results should be used as guides to the deliberations and judgements of the legislator in much the same way as other factual data are used."¹⁴

Policy execution is "activity designed to get a portion of the public to change its behaviour in some way".¹⁵ Implied in this definition, and often overlooked is the attempted achievement of an aim which, "in the analytical sense, must be defined as the difference between the anticipated future state of affairs and that which it could have been predicted would ensue from the initial situation"¹⁶ without the implementation of the policy. This implication is important in the formation and evaluation of policy. Not all of the effects of social action are reflected in the social statistics and critical appraisal of policy usually requires more data, some of which could come only from sample interview surveys.

Evaluation research "not only evaluates but also helps to guide the action process".¹⁷ It can do this by "assaying the 'before action' state of mind of the population . . . and find out as much as possible about the possibilities for and obstacles to, the action programme before it is put into operation".¹⁸ For policy, in all of its phases, "attitudes, expectations, wishes, activities, facts, estimates and so on, are of varying degrees of importance"¹⁹ and what they are and of how much importance can be revealed by the sample interview survey.

Limitations

Despite widespread use of sample surveys in numerous phases of social science research and social action, and notwithstanding expressions of optimism in their continued and expanded use in the future^{20 21} and continued improvements in making sample interview surveys,²² the sample interview survey particularly has some serious limitations. These occur within each of the several phases into which a survey may be divided. Each seems to be clearcut and they may be summarised as (i) statement of hypothesis and objectives, (ii) sampling, (iii) construction of questionnaire, (iv) interviewing and (v) analysis of

¹⁴ Likert, *op. cit.*, p. 249.

¹⁵ Arnold M. Rose, *Theory and Method in the Social Sciences* (Minneapolis: University of Minnesota Press, 1954), p. 171.

¹⁶ Talcott Parsons, *The Structure of Social Action* (Glencoe, Illinois: The Free Press, 1947), p. 49.

¹⁷ Rose, *op. cit.*, p. 172.

¹⁸ *Loc. cit.*

¹⁹ *Ibid.*, p. 301

²⁰ *Ibid.*, p. 304.

²¹ Likert, *op. cit.*, p. 281.

²² Rose, *op. cit.*, p. 305.

data. Phases one and five above are closely related. The keynote of analysis should be the testing of hypotheses, which means "the study of certain breakdowns and cross tabulations that have been deliberately provided for in the study design".²³ On the other hand, in the social sciences it often may not be possible "to start out with a sharply formulated hypothesis; most studies are exploratory . . . and even if the original problem was well thought through, the actual study often has new and unanticipated implications".²⁴ Both of these latter points are certainly true of many farm surveys to date, excepting perhaps those which are entirely enumerative.

The construction of questionnaires and interview procedures have become highly refined in recent years. But there is still much disagreement. For instance, in considering some limitations which restrict the use of interview surveys Katona states "that asking for information that is considered secret must be avoided; reference to tax returns filed may endanger the interview".²⁵ Neither Kinsey²⁶ nor Rose²⁷ would seem to agree with this. Some other limitations and difficulties which cannot always be overcome in a completely satisfactory manner are limits to the time which an interviewer can maintain rapport with the respondent, interviewer bias, question bias, question order, validity of question, whether respondents know the answers, open-ended versus closed questions, depth of probing, reliability of response, possibility of obtaining interviewers' insights separately from the field data and the inherent difficulties of measuring the "subjective world of the individual".²⁸ Many of these constitute unresolved problems which limit the efficiency of the interview and most are still the subject of active experimentation.^{29, 30} This list of limitations may seem to be so forbidding as to discourage interview surveys by any but highly trained interviewers. For surveys which are basically enumerative in nature and for many of those which constitute evaluation research the interview can be done by untrained persons with high general intelligence and knowledge, provided they use the proper research tools.³¹ But interview surveys which rely on deep probing require the trained research person.^{32 33}

²³ Krech and Crutchfield, *op. cit.*, p. 302.

²⁴ Patricia L. Kendall and Paul F. Lazarfeld, "Problems of Survey Analysis", *Continuities in Social Research*, Edited by Robert K. Merton and Paul F. Lazarfeld (Glencoe, Illinois: The Free Press, 1950), p. 133.

²⁵ George Katona, "Variability of Consumer Behaviour and the Survey Method", *Contributions of Survey Methods to Economics*, Klein, *op. cit.*, pp. 61-62.

²⁶ Alfred C. Kinsey, Wardell B. Pomeroy and Clyde E. Martin, *Sexual Behaviour in the Human Male* (Philadelphia: W. B. Saunders Coy., 1948), pp. 42-44.

²⁷ Rose, *op. cit.*, p. 307.

²⁸ Herbert Hyman, "Interviewing as a Scientific Procedure", *The Policy Sciences*, Lerner and Lesswell, *op. cit.*, pp. 203-216.

²⁹ *Loc. cit.*

³⁰ Rose, *op. cit.*, pp. 306-308.

³¹ *Ibid.*, p. 174.

³² *Loc. cit.*

³³ Kinsey et. al., *op. cit.*, pp. 61-62.

4. FARM SURVEYS IN AUSTRALIA

Enumerative Surveys

Most farm surveys published in Australia are of the sample enumerative type providing information not collected in the agricultural and pastoral statistics schedules and which in the United States of America is largely obtained from farm management service sources.³⁴ In these surveys all of the data sought are quantitative and are subsequently presented as simple frequency distributions, with or without the presentation and discussion of relationships either as case studies, cross tabulations or regressions. Of these surveys those made primarily for the calculation of unit costs of production are the most widely known. Typical of these are surveys of the Bureau of Agricultural Economics. The support for cost of production surveys comes almost entirely from the farming community and "price fixer", notwithstanding a current belief that they "enable the formulation of valuable hypotheses",³⁵ unequivocal condemnation by agricultural economists for their use in price determination and for farm management purposes,³⁶ and their abandonment in America and Great Britain. In farm business surveys emphasis tends to be placed on factors over which it is considered the farmer has substantial control and which are thought to summarise those aspects of organisation and management of immediate importance in obtaining higher financial returns. The factors usually considered are farm income, farm size, rates of production, labour efficiency and direction of production. The actual measures of these factors used in analysis differ according to the type of farming under study. Analysis may be by cross-tabulation³⁷ or multiple regression.³⁸ The main purpose of such analysis is to attempt to isolate important areas of management and to provide standards for farmers and extension workers against which they can compare existing levels of performance of individual farms. Where ranges of data are given, where an individual farm ranks in respect of a particular factor can be located. In resource productivity surveys the emphasis is on the measurement of average or marginal value productivities. These analyses are concerned with levels of inputs and are used to suggest the net income response to changes in levels of various inputs within farms,³⁹ and to indicate directions in which

³⁴ George A. Pond, *Farm Accounts as a Source of Data for Farm Management Research*, University of Minnesota Agricultural Experiment Station, February, 1956. Technical Bulletin 219 (February, 1956), p. 4.

³⁵ J. G. Crawford, "Cost of Production Surveys in Relation to Price Fixing of Primary Products", *The Economic Record* (Supplement, August, 1949), p. 46.

³⁶ Merrill K. Bennett, *Farm Cost Studies in the United States* (Stanford University: Food Research Institute, 1928). K. O. Campbell, "Production-Cost Studies as a Field of Research in Agricultural Economics", *Journal of the Australian Institute of Agricultural Science*, Vol. 10, No. 1 (March, 1944).

³⁷ *Report on the Economic Aspects of Mixed Farming in the Murray Valley* (Canberra: Government Printer, Prime Minister's Dept., 1930).

³⁸ Henry P. Schapper, *A Survey of Dairy Farming in the Far South-West of Western Australia* (University of Western Australia, 1953).

³⁹ R. G. Mauldon and Henry P. Schapper, "A Production Function from Farms in the Whole Milk Region of Western Australia" (In Press).

inter-farm⁴⁰ and farm-industry resource transfers may be made profitably. Another type of survey, enumerative in character, is that in which the data sought relate mainly to specific farm practices⁴¹ which are known or thought to be of importance in successful farming. These surveys can show the need for emphasis in respect of particular topics on which extension services should perhaps concentrate. Finally, there are sample enumerative farm surveys, which are chiefly descriptive of housing and living conditions on farms.⁴²

The general intention behind most of these surveys is to provide guides to action on individual farms by extension officers and farmers. Most of them contain a large descriptive element which in itself could be of considerable value to extension agents who can otherwise perhaps get a similar overall picture of a particular type of farming only after years of experience. The actual use of these survey results is not easy. There is a temptation to uncritically recommend on the basis of survey analyses, that low-income farmers should push yields to the limit and adopt the practices and levels and combinations of inputs of high-income farmers. Such recommendations would fail to recognise that in most surveys differences between farmers in the quality of soils, stock, machinery and labour are usually ignored, and that differences between farms in their under- or over-employment of labour and of trends in soil fertility are not measured. Survey results are usually limited to one particular year, usually ignore the desirability of inter-farm transfers and give no hint of still further economic possibilities available to the better farmers. Some of these pitfalls are avoided when it is realised that survey results can only suggest possibly desirable changes in farm organisation and operation and that before any change is recommended and undertaken its likely outcome for each individual farm should first be budgeted.

Interview Surveys

The second major type of farm survey is that in which the interview is used to obtain subjective data such as attitudes, intentions, expectations and motivations. In this type of survey a high degree of interviewing skill and appreciation of "interviewing as a scientific procedure" are prerequisites for reliable results. One major purpose of such surveys is, broadly, to endeavour to understand past and likely continued differences between farmers in levels of farming performances which cannot be attributed solely to farm size and other physical attributes. Explanations of these differences run in such terms as attitudes to borrowing, propensity to innovate, levels of knowledge, willingness to take risks and to invest for further increases in farm production.

⁴⁰ J. L. Dillon, "Marginal Productivities of Resources in Two Farming Areas of N.S.W.", *Economic Monograph*, No. 188, Economic Society of Australia and New Zealand, New South Wales Branch (May, 1956).

⁴¹ P. S. Lang, H. M. Tulloch, and B. V. Fennessy, *Survey of the Sheep Industry in the Western District of Victoria* (University of Melbourne: School of Agriculture, 1952).

⁴² A. J. Holt, *Wheat Farms of Victoria. A Sociological Survey* (University of Melbourne: The School of Agriculture, 1947).

Recently in Australia there has been a marked shift from the entirely enumerative farm survey to the interview survey in which the emphasis is on subjective data. Usually census-type material and subjective data are sought at the same time. A summary of selected findings may best illustrate the importance of this latter type of data. The obstacles seen by 71 farmers to further and faster development of their dairy farms in New South Wales are reported as follows:—old age and/or sickness 23 per cent of sample, income adequate and further developmental work does not warrant the necessary effort and re-organisation 23 per cent; tenure complications inhibiting 30 per cent; insufficient labour 10 per cent; waiting for the development of new pasture improvement technique 9 per cent; lack of finance 40 per cent; and other reasons 11 per cent.⁴³ In another survey⁴⁴ it was found that actual herd averages and the scope the sample dairy farmers saw for profitably increasing their herd average were inversely related to over-rating their own actual levels of performance. In the same survey the farmers' reasons are given for not spending their savings on the profitable investment opportunities they saw on their own farms. It was shown also that of the 68 sample farmers 43 per cent considered themselves to be in a position to borrow for their stated capital needs but had no intention of doing so. Another survey⁴⁵ attempted to picture farmers' attitudes to farm investments, borrowing, taxation, prices and increased production and to "reasonable income". The information which such surveys as these can and does provide is particularly important at all levels of policy formation and implementation. To have an appreciation obtained from systematically presented empirical data of how farmers are likely to respond to policy measures is necessary. Otherwise policy-makers are inclined to assume that the motives behind farmers' decisions are almost entirely economic or mechanistic.

Despite the fairly broad approach of our farm surveys it is evident that they do not yet play a major role in agricultural economic policy, and although they are important in Australian agricultural economic research such activity is still conducted on only a very small scale. Certainly they have not yet even nearly reached the level of the potential suggested in Section 3 and detailed in Section 5. Associated with this state of affairs are the facts that there is considerable emphasis still on cost of production surveys, there is no overall pattern of survey enquiry and surveys are restricted in depth and time. There is no continuity in the sense that the results of one survey become the part basis of another. They are restricted to one interview or to one year. The lack of integration and of continuity are related to the newness of farm surveys in Australia, to lack of personnel, the non-existence of

⁴³ W. F. Owen, "Dairy Farming on the Red Basaltic Soils of the Richmond-Tweed Region", *Review of Marketing and Agricultural Economics*, Vol. 22, No. 1 (March, 1954), pp. 57-58.

⁴⁴ Henry P. Schapper, *A Survey of Whole Milk Producers for the Perth Metropolitan Area, Western Australia* (Institute of Agriculture, University of Western Australia, 1956).

⁴⁵ D. B. Williams, Ross Parish and A. G. Bollen, "Attitudes and Expectations of Wheatgrowers in New South Wales", *Review of Marketing and Agricultural Economics*, Vol. 21, No. 1 (March, 1953), pp. 7-72.

a forum for agricultural economists, and of course to the fact that within fairly broad limits, it is desirable that individuals should have freedom of choice in their researches.

Shortcomings

Certain shortcomings of particular surveys can be attributed to this state of affairs. In one survey, the finding that "diversity is the outstanding characteristic of the industry" could appropriately be attributed to the definition of the population sampled and to inadequate size of sample.⁴⁶ In another in which the validity of results depended largely on interviewer skill, the interviewing procedure appeared to have been faulty and depth of probing inadequate. Answers were suggested to farmers by the interviewers, interpretations appeared to have been forced instead of arising out of further questioning and in some cases interviewers seem to have been looking to farmers for confirmation of their own ideas.⁴⁷ In another only facts are presented and they are left to speak for themselves.⁴⁸ It is open to argument whether facts ever do speak up for themselves as forcefully and as effectively as when they are also interpreted by the persons who collected, analysed and presented them.

In most of the farm surveys made so far there has been little innovation; given the particular aims, sampling and analysis have followed a well defined pattern. It may be fruitful to experiment with stratification according to particular factors such as farm size, education, crop rotation and so on, instead of adhering to simple random sampling. Little has yet been done in making comparative studies between types of farming and deliberately choosing contrasting situations. There appears to be scope for following up surveys with individual farm budget studies and as yet farm survey data appear to have made little or no impact on state extension services. The attempts made so far to scale and to quantify levels of knowledge and propensities appear to have been fruitful and experimentation with scaling procedures for the measurement of a wider range of subjective data would seem worthwhile.

Such comments as these do not in any way detract from the overall *minimum* achievements of surveys in Australia; namely, to have shown that they are capable of systematising and making more precise and adding to commonsense analyses made by competent agriculturalists and to have brought about the development of skills in farm survey techniques and analyses.

5. FUTURE ROLE OF FARM SURVEYS

General Research

A "well rounded" programme of research in economics of farm production has been outlined as follows:—(i) A description of prevailing farming systems and measurement of current changes in farming. (ii)

⁴⁶ *Fat Lamb Industry Survey 1951* (Canberra: Commonwealth Government Printer, 1953.) Department of Commerce and Agriculture, Bulletin No. 10.

⁴⁷ Williams, Parish and Bollen, *op. cit.*

⁴⁸ Lang, Tulloch and Fennessy, *op. cit.*

Detailed analyses of farm management problems by size, type, location and other factors. (iii) Economic effects of institutional and technological changes on agricultural production. (iv) Explorations in new fields and development of research methodology. Reducing this programme to a minimum, Wilcox⁴⁹ suggests "studies of costs and returns on important sizes and types of farms" to supplement "estimates of gross farm income and production expenses", for "teaching and other general utility purposes"; analyses of why some farmers made higher incomes than others and of the practices of higher income farmers, for extension purposes; field studies to obtain input-output data applicable to specific farm situations; and studies of problem situations such as resource combination problems growing out of the adoption of soil conservation practices or of some economic aspects of pasture development as made recently by Gruen.⁵⁰ A programme of research such as this is aimed at guiding "individual farmers in the best use of resources . . . and to provide fundamental analyses of the efficiency of farm resource combinations which can serve as a basis for bettering the public administration of resources where agricultural policy or institutions which condition production efficiency are concerned".⁵¹ No doubt modifications could be made in our annual census of agriculture to assist with these problems and to allow the presentation of detailed descriptions of modal farms within major farming systems from which budgets could be prepared to use in forward-looking analyses, testing out desirable production adjustments in view of prospective price and technological changes and so on. Until such modifications are made, enumerative sample surveys are necessary for these purposes and to keep up to date on trends in resource use, farm practices, costs, returns and farm size.

It is comparatively recently that non-economic aspects of the "gap" between optimum and actual use of farm resources have held the attention of those engaged in empirical research. Not until this gap has been narrowed further "will attempts to bring about the most efficient use of farm resources become entirely realistic".⁵² The gap is seen to constitute lack of knowledge, market uncertainties, capital rationing, imperfect adjustments to price and production processes and social and psychological factors. To close it there is a need for agricultural economists to cooperate with "kindred scientists".⁵³ Empirical studies of these topics rely on the sample interview survey for their measurement and high levels of interviewing efficiency are required. Basic studies of these problems have not yet been made in Australia although it has already been noted that there is increasing attention being paid to them. Certainly there is nothing here yet to compare with current empirical researches in the United States into the decision-making process in farming which promise to yield data on "knowledge situations

⁴⁹ Walter W. Wilcox, "Research in Economics of Farm Production", *Journal of Farm Economics*, Vol. 29, No. 3 (August, 1947), p. 636.

⁵⁰ F. H. Gruen, "Financial Aspects of Pasture Improvement on Southern Wheat-Sheep Farms", *Review of Marketing and Agricultural Economics*, Vol. 24, No. 4. (December, 1956), pp. 196-221.

⁵¹ Earl O. Heady, "Elementary Models in Farm Production Economics Research", *Journal of Farm Economics*, Vol. 30, No. 2 (May, 1948), p. 205.

⁵² *Ibid.*, p. 226.

⁵³ *Loc. cit.*

in which managers find themselves", "analytical methods used . . . in making decisions", "strategies employed in putting decisions into action", personal nature of inputs and outputs and the values attached by managers to money income, security, stability, etc. Answers to such questions as these are "fundamental to the kind of teaching and research that will yield a maximum [fulfilment] of farm family goals from a given input of management and other resources",⁵⁴ and they promise to yield theories and concepts of importance to national measures such as extension and credit policy. As Johnston states,

"The potential importance of this brought out when one realizes that both the evolving body of managerial theory and empirical work indicate that deductive thinking is an important part of the management process; this is in sharp contrast with the emphasis of extension and vocational agriculture workers on inductive teaching, i.e., learning by doing rather than by reasoning—going from problem to principle, rather than from principle to problem. Once the managerial processes are better understood, we will be able to teach management rather than farm organization and operation. Information on the managerial processes also helps us understand farm people. For instance, my understanding of risk discounting, the flexibility principle, the learning principle and security helps me understand why certain disadvantaged Kentucky farmers do not borrow money to make investments paying as high as 40 per cent returns."⁵⁵

Another field of investigation for which the sample interview survey is indispensable is "for the determination of satisfaction curves" of farmers to show "whether a given programme would be acceptable", "giving us among other things some measurement of how well our normal political processes are functioning in the development of agricultural policy . . . and help isolate some of the factors influencing the different marginal rates of substitution of social values between individuals".⁵⁶ This seems particularly important under democratic government in view of evidence that policy statements and opinions of farmers' leaders may not represent the valuations and needs of rank and file farmers.⁵⁷

Extension and Credit

One of the most needed developments in the services to Australian agriculture is in the expansion of State extension services to embrace farm management extension. In this, farm surveys could play a triple role. Firstly they can provide data on how farms of varying types are organised and managed, on the gap between recommendation and practice and on the personal and institutional obstacles to closing the

⁵⁴ Harold R. Jensen, "Progress and Problems in Decision Making Studies. The Nature of the Study", *Journal of Farm Economics*, Vol. 37, No. 5. (December, 1955), p. 1098.

⁵⁵ Glenn L. Johnson, "Handling Problems of Risk and Uncertainty in Farm Management Analysis", *Journal of Farm Economics*, Vol. 34, No. 5. (December, 1952), p. 815.

⁵⁶ Dale E. Hathaway, "Agricultural Policy and Farmers' Freedom: A Suggested Framework", *Journal of Farm Economics*, Vol. 35, No. 4 (November, 1953), p. 509.

⁵⁷ Dale E. Hathaway and Lawrence W. Witt, "Agricultural Policy: Whose Valuations?", *Journal of Farm Economics*, Vol. 34, No. 3 (August, 1952), pp. 299-309.

gap. Secondly, they could become the medium through which existing extension services, personnel and administration, could be oriented to see farming in its wholeness rather than as a series of discrete technical problems and achievements. Thirdly, surveys could become useful as benchmarks against which could be measured rates of improvement and achievement of farm goals. Present extension, conditioned as it is by inadequate personnel resources, is restricted to the technical aspects of experimental data and farm practices, and it has "proceeded without the backing of much of the economic information on which it should be founded".⁵⁸ The desirability of progressing beyond this present restricted approach has now been long and widely recognised not only by agricultural economists but also by Australian agricultural scientists.⁵⁹

At another important institutional level, namely credit, there is a "basic deficiency in our present knowledge of the rural industries", and it has been recently pointed out that it is "urgently necessary that comprehensive surveys . . . be made in order to assess . . . the effects of present credit policy on rural development".⁶⁰ The recent finding that farmers' expansion of their capital equipment is voluntarily restricted by their attitudes to further borrowing rather than by insufficient collateral is important for policy makers. It is important to know how widespread are such attitudes, and to know about "the suitability or otherwise of existing credit facilities for farm firms and the implications of the findings for economic and national policy".⁶¹

It is clear that in two major agricultural services, extension and credit, there is widespread realisation of some fundamental deficiencies. It seems to be similarly realised, though perhaps not so clearly, that various types of surveys would make worthwhile contributions to the precise location and analyses of these deficiencies and, from what has already been said, be useful as guides to, and as evaluations of, the actual policies implemented to overcome them.

An urgent task is for policy evaluation to be incorporated into policy itself.

⁵⁸ D. B. Williams, "Farm Management Research in Australia", *Journal of Australian Institute of Agricultural Science*, Vol. 19, No. 3 (September, 1953), p. 160.

⁵⁹ For instance, B. T. Dickson, "Some Thoughts About Agriculture", *Journal of Australian Institute of Agricultural Science*, Vol. 12, Nos. 1-2 (June, 1946), pp. 1-4.

A. W. S. Moodie, "Agricultural Efficiency and Its Relationship to Production Costs", *Journal of Australian Institute of Agricultural Science*, Vol. 7, No. 2 (June, 1941), pp. 49-55.

J. A. Prescott, "The Institute in War Time", *Journal of Australian Institute of Agricultural Science*, Vol. 9, No. 1 (March, 1943), pp. 1-6.

H. C. Trumble, "Some Reflections on the Rural Problem", *Journal of Australian Institute of Agricultural Science*, Vol. 9, No. 2 (June, 1943), pp. 49-55.

⁶⁰ P. C. Druce, "Credit Policy for Rural Development", *Review of Marketing and Agricultural Economics*, Vol. 24, No. 4 (December, 1956), p. 193.

⁶¹ Schapper, *op. cit.*, p. 56.

DISCUSSION

F. O. GROGAN—*Department of Trade*

I think most of us will agree with Mr. Schapper's remarks about the useful contribution which farm surveys are making and can make to research and policy formulation on agriculture. I will raise the following points for discussion:

(i) Mr. Schapper says surveys of the farm management type differ from those concerned with the physical attributes of the farm *only* in that they are concerned mainly with farm operators. The word "only" in that sentence to my mind has very great significance. Particularly when we are dealing with surveys of the so-called "Attitudes and Incentives" type I believe the pitfalls are so great as not to be completely overcome by the most careful selection and training of interviewers. Modern psychology has revealed how unreliable are the rationalisations on which we are apt often to explain our actions or intentions. I think surveys of the type where we ask people what they intend to do and why, should always be followed up, if practicable, by a later survey checking the performance against the promise.

(ii) Problems of sampling and of non-response by those being interviewed are real ones if we are concerned with the reliability of our findings in relation to a particular population. When accuracy in this respect is not vital (and this is very often the case), then this technical problem shrinks in importance and the suggestiveness of our findings, rather than the rigour of the proof, is the main concern.

(iii) Two practical difficulties often found in conducting surveys are the provision of suitable staff and the cost. These considerations and those mentioned in my second point about sampling techniques, when considered together, suggest that the survey technique may have particular value where it is possible to use a small number of very competent interviewers using carefully controlled sampling methods to explore problems too complex for mass enumeration methods.

(iv) Mr. Schapper speaks of the unequivocal condemnation by agricultural economists of cost of production surveys for their use in price determination and for farm management purposes and he states that they have been abandoned in America and England. He quotes M. K. Bennett in support of his views.

Taking the second point first, that is, abandonment of these surveys in America and England. I certainly do not believe that the American concept of parity income for the farmer is any magic solution to the problem of price fixing. It still has to be converted into prices for the individual commodities. Similarly in England, although the primary approach to the Annual Review of Farm Guarantees is through the concept of a global figure for farm income yet this has to be translated into a series of individual commodity guarantees or prices.

For this second stage in the review, part of the evidence used is the very great amount of enterprise costing which is still carried out at the Provincial Agricultural Economics Centres in Britain.

Cost of production surveys are usually condemned for two main reasons, namely—the arbitrary nature of many of the so-called imputed items such as farmer's labour allowance and interest on capital, and the fact that any average cost arrived at is unrelated to the marginal costs which should, through the interaction of supply and demand, determine price.

Regarding the imputed items I do not think these are such a stumbling block as is often suggested. Everyone concerned with cost (or price) determinations realises clearly that judgments rather than facts are involved and most of the arguments between the industries and the Government over the determinations usually revolve around these items. The ultimate test must be what is fair and reasonable.

Regarding the relevance of average, as opposed to marginal, costs for pricing policy, Mr. Bennett, when he wrote his doctoral thesis thirty years ago, made great play with the concept of marginal costs. Much research has gone on since then and some of it has shown that the application of marginality in the costing procedures and pricing policies of individual firms is by no means as simple and straightforward as in Bennett's exposition.

Benham (in the recent 5th edition of his textbook) remarks:

"A manufacturer can usually fix his own prices but he tends to fix them at about the same level as products made by his rivals. The price of a manufactured good tends to equal the average variable cost of producing it plus a profit margin which normally covers fixed costs and gives a normal rate of return on capital to most of the firms in the industry. Normally, therefore, the price is neither so high that it attracts new firms nor so low that it forces existing firms out of business. The most efficient firms, however, will make a rather higher return on their capital and the least efficient a rather lower return than the others."

It all sounds uncannily like the apologia that usually accompanies one of our official cost determinations based on a cost of production survey. Perhaps the concept of a "fair" price which primary producers have inherited from the Middle Ages has been reinforced in the minds of primary producers since the growth of manufacturing industry, by the very human reaction, "sauce for the goose is sauce for the gander".

I wish to make it clear that I am not taking sides on this issue but merely expressing the view that if governments undertake price fixing it is not altogether reasonable for agricultural economists to condemn cost of production surveys unequivocally unless they can suggest a better basis which governments can use.

A. J. MCINTYRE—*Commonwealth Bank of Australia*

The main criticism which might be made of Mr. Schapper's paper, is that he has said rather too much about what surveys *can* achieve and too little on what particular surveys *have* achieved.

Many will want to question his criticism of cost of production surveys. He has made it appear that those agricultural economists who earn their bread and butter in this way are prostituting their art in order to satisfy the whims of primary producers' organisations. Unfortunately,

Mr. Schapper has merely stated his view without attempting to substantiate it. As an example, he might have discussed the Australian Dairy Costs Survey which admittedly had some severe limitations; however, it gave us much information on the range of costs in various areas, of use to organisations such as banks and also to extension workers.

Mr. Schapper has dismissed what he describes as enumerative surveys, because they leave facts to speak for themselves. However, he made an unfortunate choice of the bad example to illustrate his point. The example he chose was the survey of the sheep industry of Western Victoria by P. S. Lang and others. This survey has been particularly useful in stimulating new research, in helping extension workers and also graziers. In fact, it had to be useful and readable as it was one of the few surveys where readers had to pay to get a copy.

Mr. Schapper states that a survey can fall down because the original objectives were badly formulated and based on wrong assumptions. Unfortunately, he does not give us any good examples. He could have mentioned that some surveys have asked pointless questions about finance and extension. Examples come to mind where the interviewer has apparently assumed that farmers could have used extension services to give them all the information needed for a pasture improvement programme; on the north coast of New South Wales more research work is needed before extension workers can say much to some farmers about these matters.

Most people would agree with Schapper's emphasis about the importance of finding out farmers' motives. One of his own surveys, for example, was most illuminating in that it has thrown doubt on the usefulness of taxation concessions and other administrative measures designed to encourage farm development. Most of the Australian farm surveys have largely used formal questions and formal answers to explore farmers' attitudes and it is difficult to place much reliance on the results. Schapper's own surveys show a considerable improvement on some others because the questions have been carefully framed and arranged. However, I wonder whether he would agree that at times the interviewer should depart completely from a formal questionnaire, talk around the subject with the farmer and then make his own assessment of the farmer's attitude.

Mr. Schapper suggests we need comparative studies of types of farming and contrasting situations. This, indeed, could be very useful but perhaps even more useful would be comparative information about non-farming enterprises. Many of the problems of the poor farmer lacking capital are the same as the poor retailer and the small factory owner. Much could be learnt about the problems of management as applied in rural and non-rural industry, for example, the likelihood of making farming a more interesting occupation if it were run as a large-scale enterprise and not on a family basis.

Schapper complains of the low level of appreciation for work such as farm surveys. However, some blame is due to the poor presentation of reports. This is an issue about which it would be useful to have some comment. No doubt he would want the good surveys to be read

widely by teachers, extension workers, politicians and farmers and in order to reach these groups effectively, some concessions must be made to the readers.

Lastly, he is quite wrong when he said that stratified sampling has not been used in Australia. It may be true that most sampling for farm surveys has been on a straight random basis, but at least, some surveys (e.g., those done at Melbourne University) have used stratified samples.